INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS

COALESCING PLATE SEPARATOR

MODEL No BBSV-64/2/12 BBSV-64/4/12

CLIENT:

LOCATION:

BALDWIN INDUSTRIAL SYSTEMS PTY LTD

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1.0 Equipment List

BALDWIN CPS MODEL No BBSV- 64/2/12 / BBSV - 64/4/12

Approximate Dimensions: 1550mm long x 700mm wide x 1420mm high

Performance Rating: See "Design Conditions"

Approximate Dry Weight: 145kg
Approximate Operating Weight: 645kg

ASM ELECTRIC DIAPHRAGM PUMP MODEL No DT-32

Approximate Dimensions: 445mm long x 450mm wide x 480mm high

Performance Ratings: Three Phase 415V, 0.37kw motor ExD EXE

/Single Phase 240V 0.37kw motor ExD

Suction Head: 2 metres (vertical)

Discharge Head: 2 metres (vertical)

Approximate Weight: 50kg

ASM ELECTRIC DIAPHRAGM PUMP MODEL No DT-38

Approximate Dimensions: 445mm long x 450mm wide x 480mm high

Performance Ratings: Three Phase 415V, 0.75kw motor ExD EXE

/Single Phase 240V 0.75kw motor ExD

Suction Head: 2 metres (vertical)

Discharge Head: 2 metres (vertical)

Approximate Weight: 50kg

BALDWIN CONTROL PANEL WITH LEVEL PROBES MODEL LP-XXX

Dimensions: 300mm wide x 400mm high x 170mm deep

Performance Ratings: Three Phase 415V AC 50Hz/Single Phase

240V AC

BALDWIN CONTROL PANEL WITH FLOAT SWITCH MODEL LF-XXX

Dimensions: 300mm wide x 400mm high x 170mm deep

Performance Ratings: Three Phase 415V AC 50Hz/Single Phase

240V AC

2.0 Application Description

We understand that wastewater will gravitate into an in-ground holding well and then be pumped to an above-ground CPS where free oils and suspended solids will be removed to a level suitable for discharge.

2.1 DESIGN CONDITIONS

The system has been selected based on the following design parameters:

- Maximum Flow Rate = 4000L/hr 2000/hr
- Average Oil SG = 0.85
- Minimum Temperature = 22°C
- Effluent Oil Concentration = 25ppm
- Flow Status = Pumped by a diaphragm type pump operating at less than 2 strokes/second.

No chemical emulsions, surfactants, detergents or water soluble degreasers to be present.

Only "Quickbreak" type detergents may be used and only in minimal quantities.

3.0 Principles of Operation

Like all gravity separators, the Baldwin CPS depends on Stokes' Law for its performance prediction. Stokes' Law is the physical law governing the settling/rise rate of a particle/oil droplet in a fluid stream, and along with various design parameters, determines the size and type of CPS unit.

Operation of the CPS is simple:

- Contaminated water is introduced into the first section of the CPS via the diaphragm pump. Heavy solids settle out immediately and fall into the hopper, whilst large oil slugs rise to the surface.
- The remaining oily/water mixture flows through the closely spaced proprietary oleophilic coalescing plates with the smaller oil droplets and fine suspended solids being progressively separated. An oil dam prevents the collected (floating) oil from escaping into the outlet pipe. Oil skimmers are provided for the removal of the accumulated oil.
- Clean water passes underneath the base of the oil dam, over the outlet weir (funnel) and gravitates to the point of discharge.

4.0 Installation Instructions

BALDWIN CPS & PUMP

Installation should be carried out by a licensed plumber. The basic steps for installation of the CPS unit are as follows:

- 1. Select a sound, level foundation for locating the CPS & pump. Secure to the foundation with 10-12mm diameter corrosion resistant dynabolts or similar fasteners.
- 2. If the pump is to be mounted in an area open to the weather (ie not directly under the inlet end of the CPS), the manufacturer recommends that the unit be installed under a cowl or similar enclosure to exclude rainwater and allow free airflow around the pump motor.
 - Note: Remove small vent plug from oil filler cap before operating pump.
- 3. Please refer to the pump manufacturer's instructions in Appendix B of this manual for further details.
- 4. Connect the clean water outlet pipe to the outlet connection of the CPS.
- 5. Connect the oil outlets from the oil skimmers to an oil collection drum or tank. A normally open valve may be installed in the oil outlet line, if required for isolation purposes.
- 6. Install a ¼ turn valve on the solids outlet at the base of the hopper. If required install piping to a sludge drying pit if available.
- 7. Connect the oily-water inlet pipe work from the collection pit to the suction side of the pump. Install a floating suction or course strainer to the end of the pipe work inside the collection tank. Install the pump discharge to the inlet connection of the CPS. Flexible hose or couplings may be required either side of the pump, to dampen shock from the pumps operation. They must be installed on ridged steel pipe work to avoid system failures. Unions or other easily removable connections are required either side of the pump to allow the quick replacement of the consumable flap valves or removal of the pump.

Notes:

- * The dirty water inlet and the two oil skimmer outlets are 40mm BSP threaded male connections.
- * The clean water outlet and the solids outlets are 50mm BSP threaded male connections.
- * All pipework is to be independently supported not supported by the separator connection nozzles.
- * A bund (minimum capacity = 660L) complete with a drain back into the dirty water collection tank should be constructed around the CPS unit, in case of spillage etc during servicing. Note; bunds must be constructed to relevant Australian Standards & local regulations. (BBSV capacity = 500 litres)

BALDWIN CONTROL PANEL

The control panel should be installed by a licensed electrician as per the wiring diagram supplied. All applicable wiring standards should be adhered to.

For full details, please refer to the wiring diagrams in Appendix C of this manual.

LEVEL PROBE INSTALLATION:

- 1. **Reference Probe**: The reference probe (R) should be installed so that the base is approximately 20mm below the low level probe.
- 2. **Low Level Probe**: The low level probe (L) is provided to stop the pump before the liquid level drops below the suction pipe. This probe should be mounted so that the base of the probe is 50-100mm above the pump suction strainer.
- 3. **High Level Probe**: When the water level reaches the high level probe (H), the pump is automatically switched on to pump the water to the CPS. This probe should be mounted so that the base of the probe is far enough above the base of the low-level probe to allow the pump to operate for a minimum of 15mins if possible.
- 4. **Extra High Level Probe:** If provided, activates an alarm when the water level reaches the level probe (EH). The probe should be mounted so that the base is higher than the high level probe.

Note:

- * All collection tanks are different, therefore individual assessment is required to determine the correct height for the suction pipe & associated level probes.
- * It is important to leave a coil of wire at the electrode holder to allow easy removal of the probes for cleaning & servicing without the need for disconnection.
- * The Control Panel and IS Barrier Housing (if applicable) are to be mounted in a "safe" area; ie outside any hazardous zone

PLUMBING INSTALLATION

Installation is to comply with all relevant Australian plumbing standards and the relevant local water authority requirements. Refer to the Typical Layout drawing in the appendix of this manual for general installation guidelines. Specific attention to be paid to the following points:

- Pump manufacturers pipe size requirements (Pump manual in Appendix)
- Collection Pit requirements
- Plumbing connections to & from collection pit for bund area and separator
- Waste collection containers
- Bund area requirements
- Trade waste sampling point with tundish

5.0 Operating Instructions

The basic steps for the general operation of the CPS unit are described below:

Initial Start-up

This procedure is to be followed after the initial installation, or after the unit has been drained, cleaned and is ready to be brought back into operation.

- 1. Ensure that the water inlet is closed off by isolating the pump (ie turn the switch on the control panel to "OFF").
- 2. Set the oil skimmers high, approx. 35mm above the threaded oil skimmer pipe. Ensure that there are no obstructions in the oil or water outlet piping and remove any foreign matter if necessary.
- 3. Ensure all fittings are tight and secure.
- 4. Fill the CPS with clean water until water starts to flow over the outlet weir (funnel).
- 5. Check for leaks or blockages.
- 6. Set the switch on the Control Panel to "AUTO".
- 7. Once sufficient wastewater has accumulated in the collection tank, the pump will activate allowing the contaminated oil/water mixture to enter the tank.
 - Note: When "AUTO" is selected, the float switch or level probes are responsible for pump control.
- 8. After the pump has primed & then operated for approximately 5mins, set the top of the inlet oil skimmer socket approximately 5mm above and the discharge end approximately 3mm above the maximum operating water level by screwing the sockets up or down. Secure the lock nuts on each skimmer socket to ensure no movement.

Note:

- * Skimmers can be adjusted if necessary, but remember that it is acceptable for an oil layer of approximately 5-10mm to be maintained on the surface of the CPS at all times.
- * Always adjust oil skimmers relating to the MAXIMUM water level (ie at pump full flow conditions).

ASM ELECTRIC DIAPHRAGM PUMP

Please refer to the manufacturer's instructions in Appendix B of this manual.

Note:

- * If at any time the pit needs to be pumped down to a low level, the unit can be switched to "MANUAL".
- * In the "MANUAL" mode, the pump must be switched off by the operator ie the switch must be returned to the "AUTO or OFF" position to stop the pump. The low-level position of the float or level probes will not stop the pump in the manual position.

6.0 Maintenance

BALDWIN CPS

The solids should be drained fortnightly by opening the valve on the solids hopper until solid free water is flowing (ie all the accumulated solids have been removed, usually a few seconds when fully open). Note: Any waste to be disposed of should be collected by a suitable contractor.

It is recommended that the CPS unit be serviced regularly, the frequency being determined by the amount of solids built up in the plates at the time of the first inspection, which should take place approximately 3 months after installation.

A thin oil film present on the plates is normal. Cleaning need only be carried out if the plates are blocked by an oily sludge.

ASM ELECTRIC DIAPHRAGM PUMP

Please refer to the manufacturer's instructions in Appendix B of this manual.

BALDWIN CONTROL PANEL

Nil maintenance is required. Should any problems or difficulty arise, please contact us immediately.

7.0 Steps for Plate Pack Inspection and Servicing

- 1. The flow to the separator must be isolated by turning the switch on the control panel to the "OFF" position.
- 2. The oil skimmers can be lowered to remove accumulated oil from the surface of the CPS if required. The skimmers must be raise back up to the operating position.
- 3. Remove the plates by lifting slowly, allowing the water to drain back into the CPS.

Visual inspection will determine the amount of solids built up in the plates. If any of the plates appear to be silted up or partially blocked, they can be cleaned in one of the two following methods:

METHOD 1 - CLEANING IN SITU

- Lower the plates back into the CPS and drain the water through the solids valve on the bottom of the hopper back into the collection tank or other suitable storage tank. Note: Any waste to be disposed of must be collected by a licensed waste contractor.
- 2. Hose down the plates with a hose or pressure washer until all sludge and oil has been removed. Remove any built up solids by hosing underneath the packs, ensuring no sludge remains in the CPS.

DO NOT USE ANY DETERGENTS

- 3. Fill the CPS with clean water until water starts to flow over the outlet weir (funnel).
- 4. Return the switch on the control panel back to the "AUTO" position.



Correct Orientation of Plate Packs

METHOD 2 - CLEANING IN A BUNDED AREA

- Drain the CPS through the solids valve on the bottom of the hopper back to the collection tank. Note: Any waste to be disposed of must be collected by a licensed waste contractor.
- 2. Remove the plate packs from the CPS.
- 3. Hose the plates thoroughly (in a bunded area draining back into the collection tank), ensuring any built up sludge is removed.

DO NOT USE ANY DETERGENTS

- 4. Hose the inside of the CPS, ensuring all collected sludge and oil is removed.
- 5. Replace cleaned plate packs back into the CPS. Fill the CPS with clean water until water starts to flow over the outlet weir (funnel).
- 6. Return the switch on the control panel to the "AUTO" position.

Note:

- * The quantity of sludge found in the hopper and in the plates should be used as a basis for determining the interval between subsequent cleaning operations.
- * A thin film of oil on the surface of each plate is normal.

COLLECTION TANK CLEANING

At frequencies, depending upon the build-up of sludge and oil, the collection tank should be emptied (sucked out by a suitable contractor) and cleaned so that all sludge and oil has been removed. Scrape the walls of the collection tank to clean if necessary.

BALDWIN CPS

No spare parts are required for the CPS. Should any plates or oil skimmer parts become damaged they can be repaired or replaced by contacting:

Baldwin Industrial Systems Pty Ltd

13 Ranton Street CARDIFF NSW 2285

or

PO Box 605 CARDIFF NSW 2285

Telephone: (02) 4954 0440 Facsimile: (02) 4954 2440

Email: sales@baldwin.com.au

ASM ELECTRIC DIAPHRAGM PUMP

Please refer to the manufacturer's instructions in Appendix B of this manual.

BALDWIN CONTROL PANEL

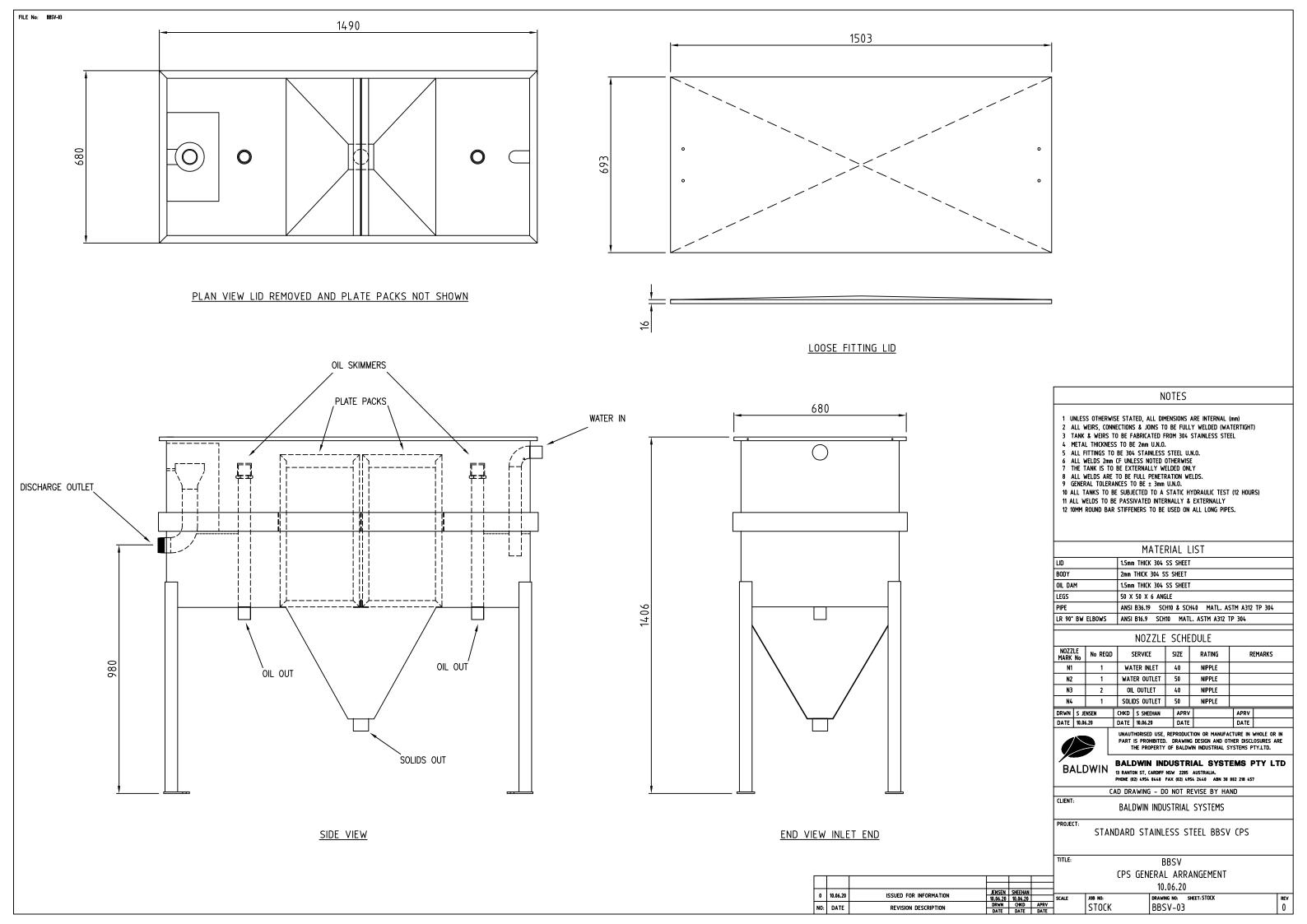
No spare parts are required.

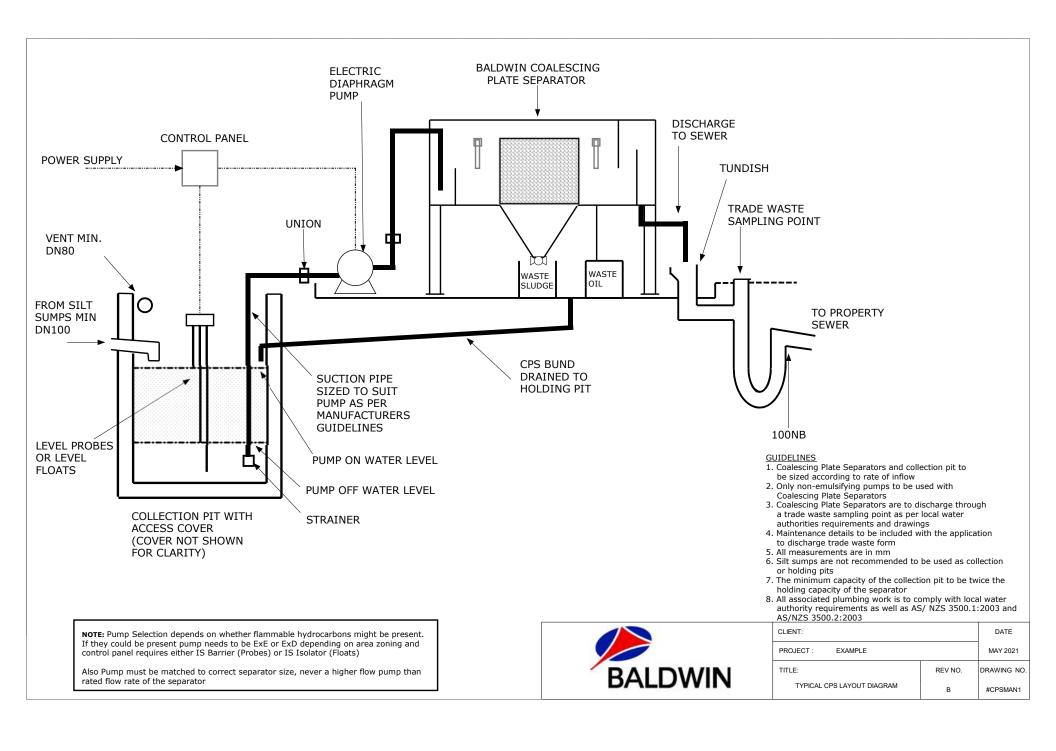
COMPLIANCE PLATE DETAILS

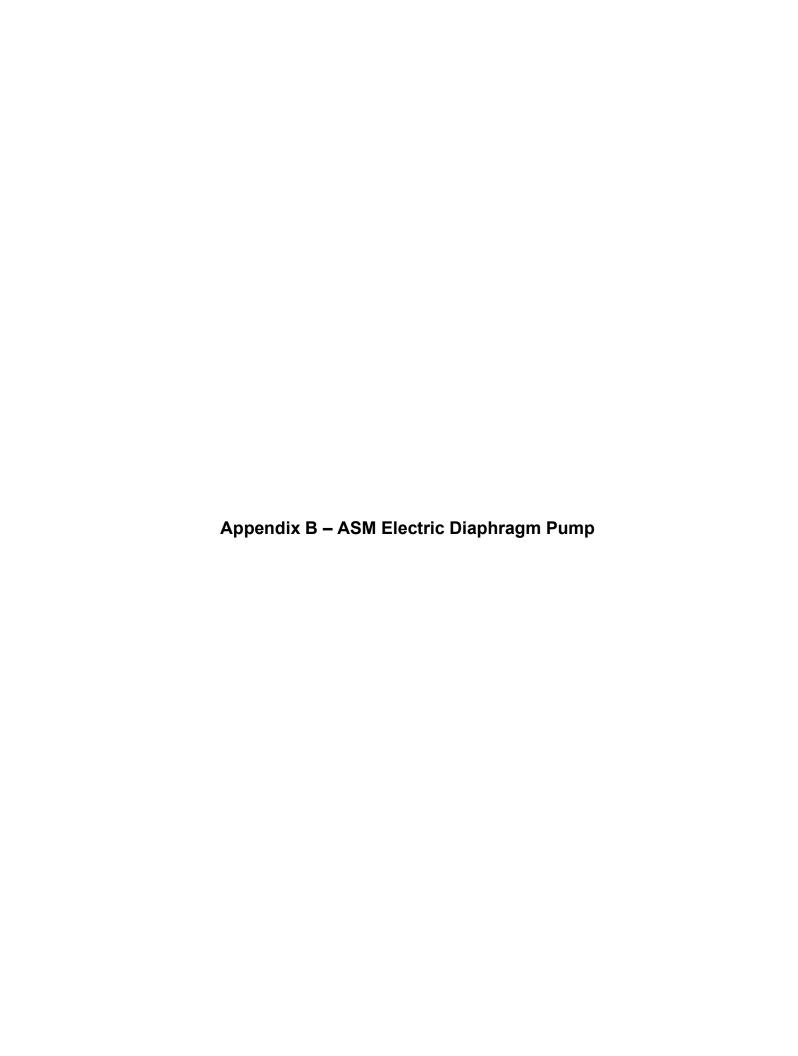
A compliance plate will be attached to the separator and show the following information:

- Description
- Model
- Date
- Reference No
- Flow rate
- Approval No





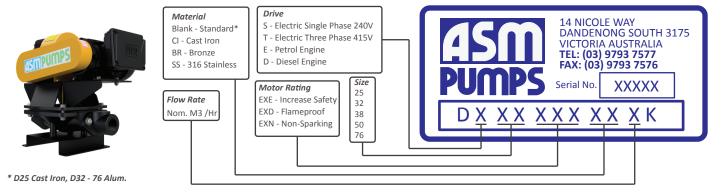




D SERIES INSTALLATION & MAINTENANCE MANUAL



READ THIS MANUAL BEFORE INSTALLING, OPERATING OR SERVICING DIAPHRAGM PUMP FAILURE TO FOLLOW INSTRUCTIONS MAY RESULT IN PUMP FAILURE & VOID WARRANTY



General

Install the pump in a level position and secure using mounting holes in base plate. *Remove vent plug from gear reducer oil filler cap*Check oil is visible in the sight glass. Use high quality 460 grade gear oil. ASM Diaphragm pumps do not require priming and can run dry without damage. For start up ensure all valves are fully open before running the pump. With the pump delivering liquid check the motor current draw is below the full load current on the motor nameplate.

Electrical

Have the electrical connection installed by a qualified electrician. Connect motor as per the motor manufacturers instructions and fit a motor overload protection device. Ensure there is unobstructed airflow to the motor cooling fan and the motor is protected from the weather and water. The correct motor rotation is clockwise viewed from the fan end.



Warning

Incorrect rotation will damage the pump

<u>Pipework</u>

Correct pipe size is a critical factor affecting pump performance and service life. Refer to pipe selection chart below. Pipework should be airtight, adequately supported and as short and direct as possible.

Use flexible connectors between pump and rigid pipe work. Fit an ASM Pulsation Dampener if rigid pipework exceeds 3m in length.

For flexible installations use reinforced suction hose for suction and discharge.



Warning

Never restrict or dead head the pump damage will occur. Use of incorrect pipe sizes will void warranty

Engine Drives

Refer to manufacturers instructions for commisioning



Warning

Maximum pump speed must not exceed 40 strokes per min.

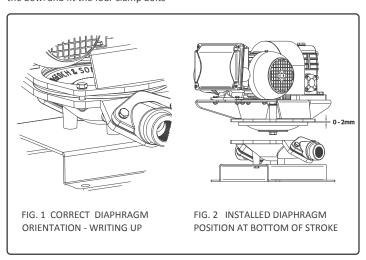
IMPORTANT INFORMATION FOR INSTALLERS INTERNAL PIPE SIZE FOR ASM DIAPHRAGM PUMPS							
FOR CLEAN LIQUIDS WITH SAME VISCOSITY AS WATER							
	SUCTION PIPE LENGTH M		DISCHA	DISCHARGE PIPE LENGTH M			
PUMP SIZE	0 - 5	5 - 10	0 - 5	5 - 10	10 - 20		
D25	25	32	32	40	40		
D32	32	40	40	50	50		
D38	40	50	50	65	65		
D50	50	80	65	80	80		
D76	80	80	80	100	100		
	SUCTION PIPE ID IN MM		DISCHARGE PIPE ID IN MM				

Maintenance

After 10 Hours operation check the oil level in the gear reducer and re-tension fasteners if required. After 100 Hours drain reducer, flush thouroughly with a light oil and replace with 460 grade gear oil. Replace gear reducer oil every 2500 Hours there after. The operator should not need to carry out further maintenance, rather inspect the pump on a regular basis and be aware of changes to the pumps normal operation. Diaphragm and valve assemblies are consumable items and will require replacement.

Diaphragm Fitting

Jog pump to take the diaprhagm, Item 3 to the bottom of the stroke. Disconnect power supply. Remove the four clamping bolts holding the drive support housing, Item 12 to the bowl casing, Item 1 and lift the drive support and diaphragm assembly clear. Remove stainless bolt Item 9 for D25 and D32 or nut for D38, D50 and D76. Remove the washer set set Item 10 and diaphragm plate Item 2. Clean and inspect both diaphragm plates and replace washer set. Replace diaphragm. The correct orrientation is with the writing up. See Fig.1 The top outer lip of the diaphragm should be 0 - 2mm from the drive support housing clamp face. See Fig.2 below. The diaphragm position will generally not require adjustment. If required, loosen and adjust the connecting rod nut/s. Mount the drive support and diaphragm assembly onto the bowl casing ensuring the diaphragm is central and located in the groove of the bowl and fit the four clamp bolts





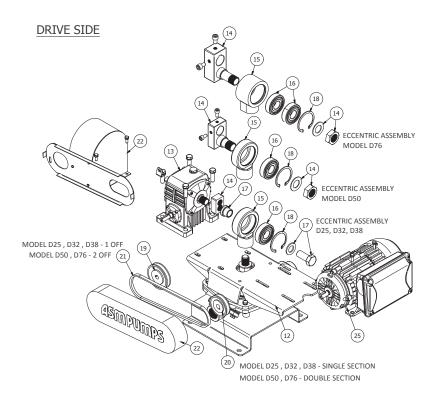
Not

All installation, repair and maintenance work should be carried out by trained, qualified personnel.

For further information contact ASM PUMPS



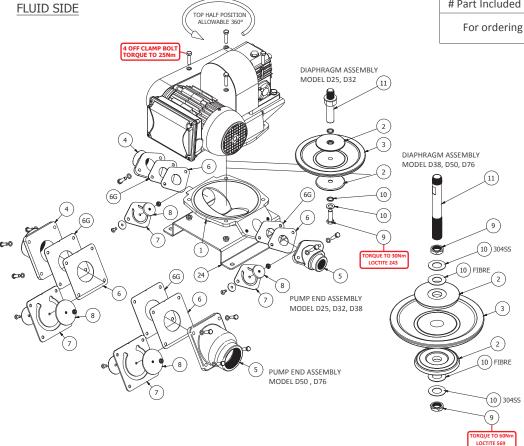




D SERIES PUMP PARTS LIST					
ITEM	DESCRIPTION	QTY.			
1	Bowl Casing	1			
2	Diaphragm Plate	2			
3 *	Diaphragm	1			
4	Suction Valve Body	1			
5	Discharge Valve Body	1			
6 * #	Valve Seat - Stainless	2			
6G * #	Valve Seat Gasket - Rubber	2			
7 * #	Flap Valve	2			
8 * #	Flap Valve Weight Set	2			
9	SS Bolt / Nut	1/2			
10 *	Washer Set	1			
11	Connecting Rod	1			
12	Drive Support Housing	1			
13	Gear Reducer	1			
14	Eccentric Block Assembly	1			
15	Eccentric Housing	1			
16	Eccentric Bearing	1 OR 2			
17	Eccentric Bolt & Spacer	1			
18	Circlip	1			
19	Gear Reducer Pulley	1			
20	Motor Pulley	1			
21 *	V-Belt	1 OR 2			
22	Gaurd Assembly	1			
23	Carry Frame	OPT.			
24	Base Plate	1			
25	Motor	1			
VA	Valve Assembly	2			
K1	Service Kit	1			
* Dart Included in K1 Corvice Kit					

* Part Included in K1 Service Kit # Part Included in VA Valve Assembly

For ordering Part No. = Model - Item No.



PD1 & PD2 PULSATION					
DAMPE	DAMPENER PARTS LIST				
ITEM	DESCRIPTION				
1	Top Half				
2	Bottom Half				
3	Diaphragm				
	am Orientation Concave (as shown)				







